This month, Space Florida had the opportunity to partner with the Department of Defense to utilize surplus *Super Loki* sounding rockets in support of an important research project. These rockets, managed by Space Florida and housed in our Camp Blanding facility, are contributing upper atmosphere monitoring capability prior to the flight test of a Defense Advanced Research Projects Agency (DARPA) hypersonic vehicle.

Scheduled to launch this week, the Hypersonic Technology Vehicle (HTV-2) high-speed glider will launch on a sub-orbital trajectory from Vandenberg Air Force Base, Calif., atop a three-stage Orbital Sciences *Minotaur IV* rocket. The automated HTV-2 will fly a series of maneuvers, testing long-duration thermal protection systems and advanced aerodynamic control features before impacting near the Reagan Test Site at Kwajalein Atoll in the Pacific Ocean.

Through a collaborative arrangement with the U.S. Army, and in support of the HTV 2 flight, a suite of our *Super Loki* rockets were transferred from Camp Blanding storage facility to the Pacific Missile Range in Hawaii, where they will be launched to provide high-altitude meteorological data prior to the overflight of the test vehicle.

This teaming agreement will benefit both the U.S. Army Kwajalein Atoll / DARPA mission and Space Florida. Our friends at the Army's Kwajalein Support Directorate said the *Super Loki* rockets were "critical in ensuring they would be able to meet their HTV-2 program requirements."

Space Florida is making these rockets available in support of Department of Defense programs such as the HTV-2 project to help meet national aerospace research requirements. In exchange, Space Florida has received a no-cost X-ray inspection and expert verification of a portion of our existing motor inventory. (We will also receive a post-flight report detailing the performance of our *Super Loki* motors.) This data will assist in quantifying the rockets' performance prior to again flying the *Super Loki* from Launch Complex 47 (LC-47) at Cape Canaveral AFS. Space Florida holds a real property license for LC-47 from the U.S. Air Force to conduct educational launches of vehicles such as the *Super Loki*.

Both Space Florida and Kwajalein will be better able to meet their mission requirements by launching these rockets. Kwajalein gets the upper altitude winds data they need at low cost, and we get performance metrics on our *Super Loki* motors. **This data will move us along the road toward again flying the *Super Loki* from Florida.**

Space Florida retains stock of more than 150 *Super Loki* rocket systems that provide a very low cost, high-altitude payload capability not available from other sources. The *Super Loki* motors were removed from the operational USAF inventory in the late 1990s and made available to the State for educational and research purposes. Since that time, Space Florida and its predecessor organizations have launched the vehicles from locations around the United States.

The *Super Loki* fits an altitude niche above balloon capabilities and below earth-orbiting satellites. It fits a payload niche small enough and inexpensive enough so that almost any educational institution can take advantage of the ride to validate portions of larger sounding rocket payloads. The rockets can be a low-cost means for testing various sounding rocket technologies or for retrieving data from the upper reaches of the atmosphere.

Space Florida is seeking cooperative arrangements with other Department of Defense and U.S. government or educational customers to make the rockets available for research purposes.

About the Super Loki:

The Super Loki motor and the PWN-12A-SB dart system is a two-stage vehicle consisting of a solid-propellant SR-110-AD-1 rocket motor as the first stage and a non-propulsive dart containing the payload as the second stage. This class of rocket has been used since 1963 to obtain information about the upper atmosphere.

Over twenty thousand successful Super Loki launches have occurred. These include launches from Cape Canaveral, Florida; Wallops Island, Virginia; Ascension Island; Kwajalein, Republic of the Marshall Islands; White Sands Missile Range, New Mexico; Fort Churchill, Manitoba; Antigua, West Indies; Chilica, Peru; Sheboygan, Wisconsin; Cape Henlopen, Delaware; and Poker Flats, Alaska.

Capable of boosting the payload to 82 km in just two minutes, the Super Loki is a little over three meters in length and weighs approximately 31 kg at launch, of which 17 kg is propellant. At burnout (2.11 seconds after launch) the Super Loki is travelling at a maximum speed of approximately Mach 4.8 or over 1,600 meters per second.